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EXAMINER

ZEMAN, MARYK

ART UNIT

PAPER NUMBER

1631

DATE MAILED: 09/10/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/769,169

Applicant(s)

BUSA, WILLIAM B.

Examiner

Mary K Zeman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2-5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-15 are pending in this application. Claims 16-23 have been canceled.

Applicant's election of Group I in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Priority

Priority to a US provisional application is acknowledged.

Information Disclosure Statement

The IDS statements filed 9/20/01, 12/6/02, 8/25/01 and 4/17/02 have each been entered and considered. Initialed copies of the 1449 forms are enclosed with this action. Items lacking publication dates, or availability dates have been struck through on the IDS forms. Such citations are improper.

Drawings

The drawings filed are acceptable to the examiner.

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are drawn to manipulations of data, wherein the

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result is not concrete, tangible or useful. The steps of claim 1 ends with "incremented co-occurrences," or a "plurality of inferences" or optionally some sort of "connection network" each described mathematically, which are not immediately concrete, tangible or useful results. MPEP 2106: "For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *Alappat* 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See *AT &T*, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557 (in banc))."

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, several of the steps lack detail required to carry out that step such that the method can be carried out. In the extracting step, there is no requirement that the database record contain chemical or biological names, and there is no step of ignoring the record if it does not contain such information. In the parsing step, (step b) how is the information to be parsed? In the filtering step (step c) nothing sets forth what is to be filtered out, or how the filtering is to be done. The determining step (step d) fails to set forth how one is to determine if the set is in a stored database. There are no steps linking the method to such a stored database, nor is there any

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indication as to how presence or absence of a particular set of parsed information is to be determined. The database does not have to be parsed in a similar manner. There is no indication that the database contains co-occurrence counts for any of the stored information such that they can be incremented as required by the determining step. In the optional construction step (step f) there is no direction as to how the connections are to be constructed between pairs, and groups of pairs or interrelated items in the database. It would seem that any one chemical or biological molecule could have many many co-occurrence counts with many other related or unrelated entities such that the construction of a connection network is not a trivial matter. It would appear that step (g) would have to be implemented prior to step (f) in order to have significant connections made. Finally, in the generating step (step h) it is unclear how one would "use" the results of an analysis method to infer a relationship. The specification indicates that a multiplicity of statistical analysis methods could be used, each of which gives differing types of results that are not necessarily interchangeable. How those results are to be used is not clearly set forth.

The limitations of claim 2 are not properly limiting of the method of claim 1. It appears to be adding an apparatus to a method claim, which is not proper, and is unclear.

Claim 4 contains the trademark/trade names Medline, PubMed, Biological Abstracts and Science Citation Index. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe sources of information that change over time and, accordingly, the identification/description is indefinite.

Claim 5 appears to be missing words, as the claim is not a grammatically correct sentence.

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Claim 7 is confusing as to how the “arcs” and “nodes” are to be represented mathematically? Or is this meant to be in a display step? How are the “arcs” to be stored in a database such that the connections are retained?

Claim 10 is unclear as there is no indication as to how to discriminate what molecules or relationships are “for cells” or what exactly this means. If one means data cells, or cells from an organism that possess membranes, a nucleus, DNA etc. it should be clearly stated.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, and 7-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Rip, A. (1984: PTO-1449).

The claims are drawn to methods of generating inferred relationships between pairs of chemicals or biological molecules, wherein structured literature database records are used. Chemical or biological molecule names are extracted, compared to a database, and if multiple molecules are extracted from a record, pair-wise occurrences of the names are stored, and used to generate connections which are used to infer relationships.

Rip et al. (Scienometrics Vol 6, No 6 (1984) pages 381-400) disclose computer-based methods of generating inferences and connections between words representing chemicals, or biological molecules such as genes, enzymes, or proteins. Rip creates a structured database of literature articles from particular sources. Records in the database are extracted and the words are analyzed by a co-occurrence method (p383). The user can pick the words or types of words of interest, i.e. proteins or chemicals, or genes. As the pairs are extracted and recorded, counts of pairs that repeat over several database records are incremented (p385, and Table 1). A connection network can be generated (Figure 1). Statistical analyses of the co-occurrences and subsequent connection networks can be performed (p387-388). This meets the limitations of claim 1, 3, 5, 8-11 and 15. Trivial associations can be excluded or ignored (p387) meeting the

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limitations of claim 13. These methods can be performed on a computer having appropriate software, thereby meeting the limitations of claim 2, and the resulting information can be stored and displayed in a manner containing "nodes" and "arcs" as set forth in claims 12, 7 and 14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Rip et al (1984) as applied to claims 1-3, 5, and 7-15 above, in view of Chen et al. (1997).

Claim 4 requires that the structured literature databases be chosen from Medline, PubMed, BA, or SCI. Claim 6 sets forth that trivial names of chemicals of biological molecules can be excluded, filtered out or ignored.

Rip et al. (Sciencometrics Vol 6, No 6 (1984) pages 381-400) disclose computer-based methods of generating inferences and connections between words representing chemicals, or biological molecules such as genes, enzymes, or proteins. Rip creates a structured database of literature articles from particular sources. Records in the database are extracted and the words are analyzed by a co-occurrence method (p383). The user can pick the words or types of words of interest, i.e. proteins or chemicals, or genes. As the pairs are extracted and recorded, counts of pairs that repeat over several database records are incremented (p385, and Table 1). A connection network can be generated (Figure 1). Statistical analyses of the co-occurrences and subsequent connection networks can be performed (p387-388). These meet the limitations of claims 1, 3, 5, 8-11 and 15. Trivial associations can be excluded or ignored (p387) meeting the limitations of claim 13. These methods can be performed on a computer having appropriate software, thereby meeting the limitations of claim 2, and the resulting information can be stored and displayed in a manner containing "nodes" and "arcs" as set forth in claims 12, 7 and 14.

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Rip does not specify that the data can come from particular databases such as Medline, nor that trivial names of the molecules can be ignored.

Chen et al. (Journal of the american society for information science, Vol. 48 No. 1 pages 17-31 (1997)) disclose methods of extracting information from structured literature databases such as Medline (see page 21). Names of Worm genes were extracted, and filtered such that trivial molecule names were excluded from analysis (page 21 column 2). Chen then performs a co-occurrence analysis on the extracted information, in a manner similar to that of Rip et al. (page 22). These co-occurences were used to build links and relationships between the extracted terms.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have used the widely available and standard databases of Medline or PubMed, as the structured literature database in the methods of Rip et al. One would have been motivated to use these databases as they are well known, they index almost all literature relating to chemical or biological molecules, and they use a standard format. One would have had a reasonable expectation of success in using these databases in the methods of Rip, because these databases encompass many fields of science offering the greatest chances to discover potential relationships between entities.

It further would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have used a filter that removes certain trivial or non-helpful chemical or biological names from records, as done by Chen et al in the methods of Rip et al. One would have been motivated to do so to limit the number of trivial or incorrect associations between names that are confusing, or that can relate to more than one distinct entity. Opne would have had a reasonable expectation of success in doing so, as the existence of confusing or trivial names for various entities is well known, and understood by those of skill in the art.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

No claim is allowed.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maimon et al. 6,374,270 discloses co-occurrence, inference database construction for corporate disclosures.

Busa US2002/0004792 A1 is a PG Pub document of a related application.

Cho et al. US2003/0014383 A1 discloses methods nearly identical to the claimed invention.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary K Zeman whose telephone number is (703) 305-7133.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached at (703) 308-4028.

The Official fax number for this Art Unit is: (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC1600 Receptionist whose telephone number is (703) 308-0196.

mkz
9/5/03


MARY K. ZEMAN
PRIMARY EXAMINER
